Goose Creek TMDL Implementation Plan Narrative
Wayne County, Georgia

Introduction

Goose Creek has been listed as an impaired water body on the State of Georgia's 303(d) list of impaired waters due to the presence of fecal coliform bacteria. Because of the recent drought, Goose Creek has become an intermittent stream. Locals described the water in the stream with a minimal flow of water at numerous times. The lack of consistent water flow and the resultant high water temperatures of remaining pools of stagnant water has no doubt contributed to any water quality problems of fecal coliform. As a possible contributor to the fecal coliform problem, locals note a dairy that sits on a tributary of Goose Creek. Locals also mentioned a problem with animal carcasses being dumped into the creek and the Wayne County Landfill, as general runoff/seepage from the landfill. Locals also pointed out the presence of feces from Mill Branch (a tributary to Goose Creek) flowing into Goose Creek at one time. Although Goose Creek has been listed on the State of Georgia's 303(d) list, it is not clear there is truly a problem with fecal coliform bacteria in Goose Creek. This is due to the fact that, of all of the sampling data that has been compiled, only one sample has been found to be in violation of the water quality standard. Furthermore, the sample in question was only a minmal violation of the standard. As a result, no percentage reduction was included in the TMDL. Thus, the TMDL Implementation Plan concentrates on educating the public about non-point sources of water pollution and encouraging the use of best management practices at the agriculture, forestry, and urban and residential levels. Also, where appropriate, the TMDL Implementation Plan encourages the investigation of possible point sources of pollution to alleviate related local concerns. Reduction of bacteria entering Goose Creek will no doubt make for better water quality regardless. A more involved and in-depth monitoring program can also help better define the issues and resolve any local concerns. Additional scientific study and examination of the standards themselves, and of the levels triggering listing, would likely help as well.

Background and Purpose

Goose Creek, lying in Wayne County, is in the Lower Altamaha River Basin and eventually flows into the Altamaha River. The eight-mile segment with headwaters in northern Wayne County is currently listed on the 303(d) list in the State of Georgia for violating the water quality standard for fecal coliform bacteria.

The presence of fecal coliform bacteria in aquatic environments indicates that the water has been contaminated with the fecal material of man or other animals. At the time this occurred, the source water might have been contaminated by pathogens or disease producing bacteria or viruses, which can also exist in fecal material. Some waterborne pathogenic diseases include typhoid fever, viral and

bacterial gastroenteritis and hepatitis A. The presence of fecal contamination is an indicator that a potential health risk exists for individuals exposed to this water. Fecal coliform bacteria may occur in ambient water as a result of the overflow of domestic sewage or non-point sources of human and animal waste.

The U.S. Clean Water Act requires a TMDL, or Total Maximum Daily Load, to be established for each pollutant in every body of water on the 303(d) list. A TMDL is a calculation of the maximum amount of pollutant, from both point and non-point sources, that a water body can receive and still adhere to the minimum water quality standard developed by the State of Georgia. The United States Department of Interior-Geological Survey (USGS) and the Georgia Environmental Protection Division (GAEPD) gathered samples from the creek beginning in January of 1999 through December of 1999. The GAEPD tested samples to detect the level of fecal coliform in Goose Creek. For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1,000 colonies per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 colonies per 100ml for any sample. The data gathered indicated one exceedance of the fecal coliform level during the months of May through October geometric mean standard of 200 colonies per 100ml in Goose Creek. In 2000, the eight-mile segment of Goose Creek was placed on the 303(d) list.

The purpose of this implementation plan is to identify the actions that must be taken in the future to decrease the level of fecal coliform in the creek by reducing the amount of bacteria entering the stream. This should improve the water quality and better enable Goose Creek to meet the state water quality standard.

Plan Preparation

The implementation plan was developed by the Heart of Georgia Altamaha RDC with the assistance of a watershed committee comprised of stakeholder representatives from the forestry industry, agriculture, the Georgia Forestry Commission, the Satilla Soil and Water Conservation District, Cooperative Extension Service, the Seven Rivers R C & D, the NRCS, Save Our Satilla, Wayne County Commissioners, two mayors, and a city manager. The Heart of Georgia Altamaha RDC was in charge of drafting the plan under a contract signed with the GA EPD to prepare a TMDL Implementation Plan. A preliminary copy of the plan and planning process was discussed and a presentation was given at the initial watershed committee meeting on April 10, 2003 at the Wayne County Commissioners Office. Along with the watershed committee, landowners with 500 acres or more of property within two miles of either side of the creek were invited to attend this initial committee meeting to give comments.

A meeting to educate the public and receive further stakeholder input by discussing and reviewing the draft plan took place with a presentation at the Wayne County Commissioners Office in Jesup, GA on May 8, 2003. At this meeting, any landowners who owned 25 acres or more of property within two miles of either side of the creek were sent a letter informing and inviting them to the public meeting. Approximately twenty-five persons attended this meeting. Public comments were solicited and input was placed into the plan. The plan addresses the steps that will be taken in the future to improve the water quality standard. The plan provides for monitoring and implementation actions to improve the water quality of Goose Creek. A draft of the final plan was mailed to the watershed stakeholder committee on June 27, 2003, for solicitation of comments before final submittal to EPD.

TMDL Data and Potential Sources of Pollution

In January 1999, the USGS and the GAEPD began a follow-up sampling and monitoring study as a part of a five-year River Basin Planning cycle (Georgia EPD). The data was gathered on a monthly basis through December 1999. The GAEPD tested samples to detect the level of fecal coliform bacteria in the segment of Goose Creek. For the months of May through October, fecal coliform should not exceed a geometric mean of 200 counts per 100ml on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours. In the months of November through April, fecal coliform should not exceed a geometric mean of 1,000 colonies per 100ml, based on at least four samples collected from a given sampling site over a 30-day period at intervals not less than 24 hours, and not to exceed a maximum of 4,000 colonies per 100ml for any sample. The data gathered indicated one exceedance of the fecal coliform level during the months of May through October geometric mean standard of 200 colonies per 100ml. In 2000, the eight-mile segment of Goose Creek was placed on the 303(d) list.

The Goose Creek watershed consists primarily of forest and cropland, with minimal areas of pasture and wetlands. Of the 49,874 acres that make up the impaired segment, 53 percent is comprised of forest. Another 31 percent is cropland.

Locals at the public meeting mentioned the presence of the Goose Creek Dairy that is located near Goose Creek. Several of the locals felt that because of the large number of cattle raised at the dairy that there is an overwhelming amount of runoff into the creek that could be a result of the dairy.

Many of the locals felt that a possible source of the fecal coliform problem was from animal carcasses being dumped directly into the creek or in the Wayne County Landfill, which is located on Goose Creek. Locals noted a problem with people dumping deer, cow and other animal carcasses into the landfill at night. The resultant runoff from the decomposition of the carcasses would be an

excellent source of fecal coliform. General landfill runoff and seepage were also blamed.

Also pointed out at the public meeting was the presence of feces that flowed from Mill Branch (a tributary of Goose Creek) into Goose Creek at one time. Locals said that it was easy to see the presence of feces just by looking at the creek. It is not known precisely what the source of the feces was; it may have been wildlife, or more likely, failing or non-existent septic systems.

Three possible non-point sources were mentioned at the public meeting; however, it is not clear that there is a definite problem of fecal coliform bacteria present in Goose Creek with relation to the state's water quality standard. One exceedance of the 200 colonies/100ml State of Georgia standard for the months of May through October was recorded when the testing was conducted in January to December of 1999. The one exceedance of the testing recorded a violation of 291 colonies per 100ml, which violated the standard by only 91 colonies per 100ml. With this minimal violation, the TMDL itself did not present a reduction percentage of fecal coliform bacteria that was required to meet the State of Georgia's standard. Without such a proposed percentage reduction, it is difficult to assess the nature of the problem and how best to address it. Further testing needs to be conducted to determine if there is a definite problem with fecal coliform bacteria in Goose Creek and to what extent such a problem exists. The minimal violation and resulting lack of uncertainty of a problem or its severity led to widespread skepticism and questioning of why the public was being involved from those in attendance at the public meeting.

Regulatory and Voluntary Measures: Existing and Future

Septic tank maintenance ordinances are an effective way to curtail residential runoff. In Wayne County, such ordinances are not in effect, although septic tank installations are regulated. It is important that future septic tank regulations, particularly relating to post-construction maintenance, be implemented at the local level. Future use of residential BMPs should also be explored as a practical means of limiting residential runoff. The local Cooperative Extension office can help individual homeowners assess and utilize BMPs through its Home*A*Syst Program.

Public education measures, beginning with the TMDL Implementation Plans and continuing in the future concerning Best Management Practices, are an efficient way to reach the local citizenry. Agriculture BMPs include, but are not limited to, the use of a waste storage structure, conservation tillage, waste storage pond, diversion, fencing, filter strips, stock trails/walkways, stream/shoreline protection, nutrient management, and well protection. Farmers utilize some of the agriculture BMPs currently; however, many do not practice them, and some do not know how to define a BMP. The NRCS and the Seven Rivers RC&D continue to work with farmers by educating them and providing them with the proper resources/information to enable them to install current and future BMPs.

Cooperative Extension can also provide individually tailored assistance with BMPs through its Farm*A*Syst Program.

The use of forestry BMPs is becoming more prevalent, however, some landowners continue to ignore forestry BMPs. The Georgia Forestry Commission has and continues to make a conscious effort to educate and monitor BMPs by aerial and land surveillance. Some forestry BMP categories include, but are not limited to, harvesting in SMZ's, mechanical site preparation, chemical site preparation, fertilization, firebreaks, skid trail stream crossings and road crossings, and logging roads. The State Implementation Committee of the forest industry's Sustainable Forestry Initiative can lend valuable support/assistance. It is unlikely that forestry is a contributor to any fecal coliform problems. To the contrary, forested buffers to streams can help filter or prevent such contamination.

Wayne County currently does not have any planning and zoning regulations in the unincorporated areas. Wayne County enforces erosion and sedimentation control measures at the state level. However, there are no erosion and sedimentation measures enforced at the local level.

The implementation of Land Use Management Regulations is planned in the future on a county-by-county basis. The regulations will be put into place as the necessary support at the local level is obtained. They will be enforced by local governments, GA DNR, GA Department of Human Resources, GA Department of Community Affairs, and the GA Forestry Commission. The regulations would utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, erosion and sedimentation measures, and septic tank permitting to manage runoff and development. The Heart of Georgia Altamaha RDC will provide technical assistance in developing a "zoning lite" ordinance to encourage local governments to implement planning and zoning measures.

Storm Water Management Regulations are planned for implementation in the future as well on a county-by-county basis. The new regulations will be put into effect as requisite local support is obtained, and the GA DNR, GA EPD, and local governments will enforce them. The regulations would utilize local ordinance enforcement to produce better erosion and sedimentation control at the time of construction. These regulations could possibly require post-construction erosion and sedimentation control and possibly utilize passive design elements in new developments and stream buffers to prevent runoff.

A Cooperative Monitoring Program is needed for future implementation. The GA DNR, GA EPD, local governments, and possibly local volunteers would conduct the program. Additional regular monitoring of Goose Creek is needed to better define pollutant sources. The program could also consist of a scientific study of issues such as fecal coliform in slow-moving blackwater streams. It also could

possibly seek funding and cooperation for watershed assessments, including possible model demonstration assessments for small watersheds, and develop a program for implementation assessments for Goose Creek.

An implementation of an Adopt-A-Stream program is needed. The program would be utilized through various organizations and groups throughout the watershed. The program will provide updates on current stream conditions in the future as the requisite funding and support are developed.

Schedule for Implementation
BMPs for the agriculture and forestry community will be promoted beginning in 2003 and continuing. The schedule for implementing the Land Use Management Regulations and the Storm Water Management Regulations is on a county-by-county basis in the near future, as local support is obtained. It would be helpful if the Cooperative Monitoring Program could be implemented in 2004 pending funding. An Adopt-A-Stream Program would also be helpful if implemented by 2004, pending local support and funding.

Monitoring Plan
The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. Adopt-A-Stream monitoring will begin to take place in the future, as the requisite funding and support are developed.

Funding
The GA Forestry Commission will continue to do aerial and land surveillance of the watershed area. Also, the Georgia Forestry Commission will continue to administer Best Management Practices Assurance Examinations. The U.S. Fish and Wildlife Service is funding a program called “Partners for Wildlife,” which is sponsored through the GA Soil and Conservation Service. Also, some funding will originate from the USDA through the Farm Service Agency and the Natural Resource Conservation Service. The UGA Cooperative Extension Service is funding two programs; Home*A*Syst and Farm*A*Syst, which are enacted by the local agriculture extension agent offices. Finally, the State Implementation Committee (SFI) is funding a program called “Sustainable Forestry Initiative.” The National Fish and Wildlife Foundation is funding a program called the General Grant Challenge Program. The Georgia Department of Natural Resources Wildlife Resources Division has produced two booklets that are available to the public, “Small Game Management in Georgia” and “Beaver Management and Control in Georgia.” Additional funding is likely needed to establish more in-depth monitoring.

Criteria to Determine Progress
The criteria to determine whether progress toward attainment is being made will be shown through the results of future monitoring by any improved fecal coliform levels through reducing the amount of bacterial loading in Goose Creek.

Conclusion

Improved future utilization and implementation of best management practices at the agricultural and residential levels will provide substantial progress in reducing the levels of fecal coliform bacteria in Goose Creek. An examination of potential non-point source(s), coupled with additional monitoring, would help to determine if a problem exists from that concern, and to what extent such a problem may exist. Any action(s) taken as a result of such an examination would further assist in producing progress. The examination of the standards themselves and the triggering mechanisms for the 303(d) listing would likely remove Goose Creek from a listing of impaired waters. We anticipate the removal of Goose Creek from the State of Georgia's 303(d) list.

STATE OF GEORGIA

TMDL IMPLEMENTATION PLAN
WATERSHED APPROACH
Altamaha River Basin

Local Watershed Governments

Heart of Georgia-AltamahaRDC
Wayne County

TMDL Implementation Plans are platforms for establishing a course of actions to restore the quality of impaired water bodies in a watershed. They are intended as a continuing process that may be revised as new conditions and information warrant. Procedures will be developed to track and evaluate the implementation of the management practices and activities identified in the plans. Once restored, appropriate management practices and activities will be continued to maintain the water bodies.

This Implementation Plan addresses an action plan, education/outreach activities, stakeholders, pollutant sources, and potential funding sources affecting the sub-basin. In addition, the Plan describes (a) regulatory and voluntary practices/control actions (*management measures*) to reduce target pollutants, (b) milestone schedules to show the development of the management measures (*measurable milestones*), (c) a monitoring plan to determine the efficiency of the management measures and measurable milestones, and (d) criteria to determine whether substantial progress is being made towards reducing pollutants in impaired waterbodies. The overall goal of the Plan is to define a set of actions that will help achieve water quality standards in the state of Georgia. Following this section is information regarding individual segments.

Goose Creek Watershed
0307010603

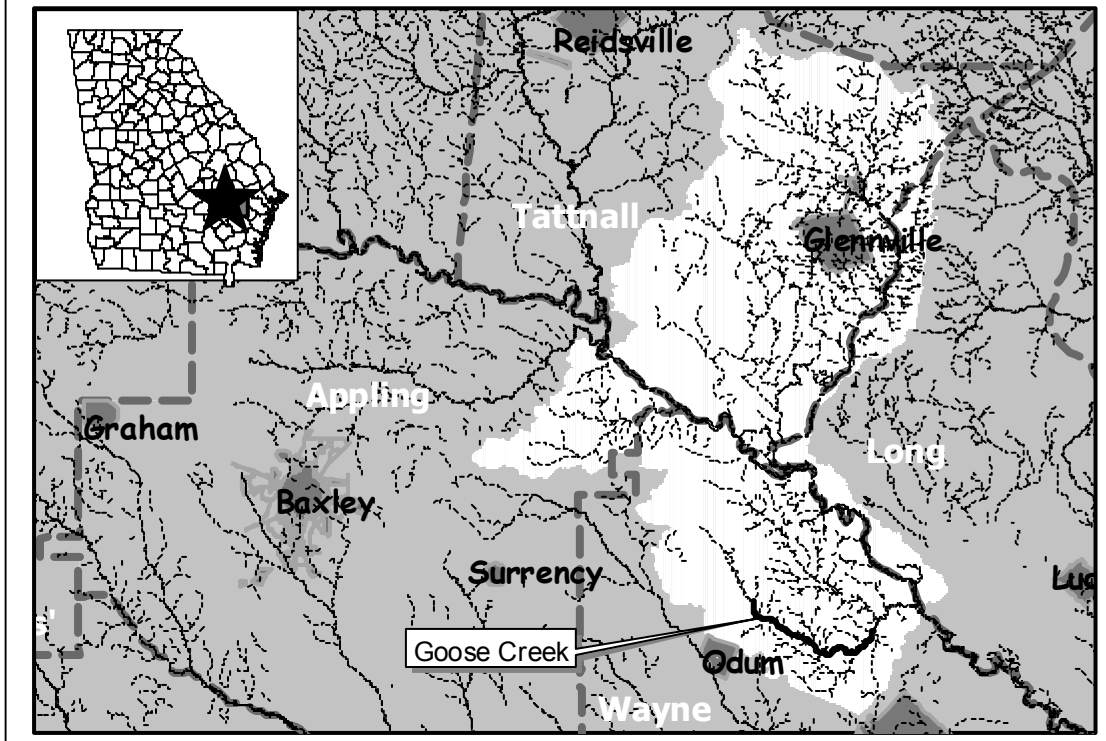


FIGURE 1

Impaired Waterbody*	Impaired Stream Location	Impairment
1. Goose Creek	U/S Rd. S1922 to Little Goose Creek	Fecal Coliform
2.		
3.		

*These Waterbody Numbers are referenced throughout the Implementation Plan.

Goose Creek Watershed
0307010603

POLLUTANT:	SOURCE:	EFFECT:	WHAT CAN I DO?	
			At Home: Community, School	At Work: Business, Government
__ Dissolved Oxygen (DO) X Fecal Coliform (FC) __ Sediment __ Metals __ Fish Consumption Guidelines (FCG) __ Other (Please List)	__ Industrial __ Urban X Agriculture __ Forestry X Residential __ Other (Please List)	__ Habitat __ Recreation __ Drinking Water __ Aesthetics X Other (Please List) Fishing	Get Involved in Adopt-A-Stream Public Education Use Proper BMPs Check Septic System	Develop Zoning Ordinances Dispose of Harmful Chemicals Properly

INFORMATION/EDUCATION/OUTREACH ACTIVITIES

An education/outreach component will be used to enhance public understanding of and participation in implementing the TMDL Implementation Plan.
List of all previous and planned information/education/outreach activities.

Responsible Organization Or Entity	Description	Impacted Waterbodies*	Target Audience	Anticipated Dates (MM/YY)
Heart of Georgia Altamaha RDC	TMDL Presentation at Wayne County Commissioners Office for the committee	Goose Creek	Local Governments, Agriculture Organizations, Georgia Forestry Commission, Forestry Industries, Satilla Soil and Water Conservation Service, Natural Resource Conservation Service, Members of the RDC Regional Water Resources Advisory Committee, Seven Rivers RC & D, DHR South Central Health District, Save Our Satilla RiverKeepers, Altamaha RiverKeeper	April 10, 2003
Heart of Georgia Altamaha RDC	A Press Release to The Press Sentinel concerning Public Meeting (May 1, 2003)	Goose Creek	General Public	May 1, 2003
Heart of Georgia Altamaha RDC	A Public Service Announcement to WIFO (105.5 FM) in Jesup, GA	Goose Creek	General Public	May 5-8, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation for Public Meeting at the Wayne County Commissioners Office in Jesup, GA	Goose Creek	Landowners with 25 Acres or more within 2 miles on either side of Goose Creek in Wayne County	May 8, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation at Wayne County Commissioners Meeting	Goose Creek	County Officials	May 5, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation at City of Odum City Council Meeting	Goose Creek	City Officials	May 7, 2003
Heart of Georgia Altamaha RDC	TMDL Presentation at City of Screven City Council Meeting	Goose Creek	City Officials	June 2, 2003

STAKEHOLDERS

EPD encourages public involvement and the active participation of stakeholders in the process of improving water quality. Stakeholders can provide valuable information and data regarding their community and the impaired water bodies and can provide insight and/or implement management measures.

List of local governments, agricultural organizations or significant landholders, commercial forestry organizations, businesses and industries, and local organizations including environmental groups and individuals with a major interest in this watershed.

Name/Organization	Address	City	State	Zip	Phone	E-Mail
City of Screven	PO Box 146	Screven	GA	31560	(912)-579-2211	
Wayne County Commissioners	PO Box 270	Jesup	GA	31598	(912)-427-5900	

Name/Organization	Address	City	State	Zip	Phone	E-Mail
Wayne County Cooperative Extension Service	PO Box 509	Jesup	GA	31598	(912)-427-5965	
GA Forestry Commission	5003 Jacksonville Hwy.	Waycross	GA	31503	(912)-287-4915	
Satilla Soil and Water Conservation Service	4484 K'ville Road	Screven	GA	31560	N/A	
Save Our Satilla	Route 3 Box 497B	Hortense	GA	31543	N/A	
Rayonier Southeast Forest Products	PO Box 626	Jesup	GA	31598	(912)-530-8471	
Natural Resource Conservation Service	3661 Altama Avenue	Brunswick	GA	31520	(912)-265-8092	
Seven Rivers RC & D	203 South Dixon St. Suite 1	Alma	GA	31510	(912)-632-4832	
City of Jesup	106 S Macon St.	Jesup	GA	31545	(912)-427-1313	
City of Odum	PO Box 159	Odum	GA	31555	(912)-586-2211	
International Paper	RT 2 Box 2	Soperton	GA	30457	(912)-529-3447	

WATER BODIES/STREAMS COVERED IN THIS PLAN:

These impaired streams are located in the same sub-basin identified by a HUC10 code. Most of the information contained in this section comes from the 303(d) list and has been completed by employees of the EPD Water Protection Branch. Data that placed stream on 303(d) list will be provided upon request.

Waterbody Name #1	Location	Miles/Area Impacted	Use Classification	Partially Supporting/ Not Supporting (PS/NS)
Goose Creek	U/S Rd. S1922 to Little Goose Creek	8	Fishing	PS

Primary County	Secondary County	Second RDC	Source (Point/ Nonpoint)
Wayne			NP

Pollutants	Water Quality Standards	Required Reduction	TMDL ID	Date TMDL Established
Fecal Coliform	1000/100 ml (geometric mean Nov.-April) 200/100 ml (geometric mean May-Oct.)	TBD		February 2002

POLLUTANT SOURCES

It is important to recognize the potential source(s) causing water quality impairment. Each source must be controlled to comply with target TMDL/Load Allocations for each pollutant. Included is a description of how the sources contribute to the impairment and the waterbody that is impaired.

List of major nonpoint source categories and sub-categories or individual sources (Urban Runoff, Agriculture, Forestry, Municipal Sewage Treatment Plant)

Pollutant	Sources of Pollutants	Description of Contribution To Impairment	Impacted Waterbodies*
Fecal Coliform	Agriculture	Possible introduction of animal waste from upslope practices and sediment from storm water runoff when BMPs are not followed	Goose Creek
Fecal Coliform	Residential	Possible introduction of discharges resulting from septic tank runoff and littering from nearby residential areas	Goose Creek

MANAGEMENT MEASURES, MEASURABLE MILESTONES AND SCHEDULE

(i.e. Local codes and ordinances, Erosion and Sedimentation Control, Storm Water Management, Local water resource monitoring)

The following table lists management measures that have been or will be implemented to achieve water quality standards and the load reductions established in the TMDL. The management measures, including regulatory or voluntary actions or other controls by governments or individuals, specifically apply to the pollutant and the waterbody for which the TMDL was written. A description is provided of how these management measures are/will be accomplished through reliable and effective delivery mechanisms, and how these management measures are/will help achieve the target TMDL. Included is the source of the pollutant, anticipated/past effectiveness of the management measure (very effective, somewhat effective, not effective), the current status (i.e. enforced, in-progress, planning), and measurable milestones and schedule. Milestones are used to measure progress in attaining water quality standards and to determine whether management measures are being implemented.

Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Georgia Water Quality Control Act (OCGA 12-5-20)	Georgia DNR, EPD	Makes it unlawful to discharge excessive pollutants into waters of the state in amounts harmful to public health, safety or welfare, animals, or the physical destruction of stream habitat	1964	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Agriculture, Residential	Goose Creek	Effective in point source pollution in dealing with local governments and industry/ Limited effectiveness in dealing with non-point sources

Measurable Milestones	Schedule		Comments
	Start	End	
Land Use Application System Permits NPDES Permits	1964	Ongoing	Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Agricultural BMPs	Georgia Soil and Water Conservation Service, Georgia Department of Agriculture	Leads effort in agricultural water quality program, develops agricultural BMP educational and monitoring efforts	1987	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Pesticide management, animal facility runoff, irrigation water management	Goose Creek	Utilization of BMPs has been found to be effective in controlling runoff and other contaminants from farming practices

Measurable Milestones	Schedule		Comments
	Start	End	
Waste Storage Structure, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways, Stream/Shoreline Protection, Nutrient Management, Well Protection, Land Use Application System Permits and NPDES Permits	1987	Ongoing	Additional BMPs possible depending on results of future monitoring/ Work with local governments and others to increase monitoring of Land Use Application System Permits and NPDES Permits

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Nutrient Application Plan	Natural Resource Conservation Service	Leads effort in agricultural water quality by developing plans to control nutrient runoff	2000	Current	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Pesticide management, irrigation water management	Goose Creek	Effective in the initial stages of the program's beginning if plans are followed properly

Measurable Milestones	Schedule		Comments
	Start	End	
Increase the number of farming establishments utilizing nutrient application plans to limit nutrient runoff	2000	Ongoing	Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Georgia Erosion and Sedimentation Control Act (OCGA 12-7-1)	Georgia Department of Natural Resources Environmental Protection Division and Local Governments	Authorizes local governments to adopt a comprehensive ordinance governing land-disturbing activities within local planning and zoning jurisdictions and require the use of BMPs	Amended 2000	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Agricultural, Residential	Goose Creek	Effectiveness is minimal due to a lack of local enforcement of erosion and sedimentation control measures

Measurable Milestones	Schedule		Comments
	Start	End	
Local erosion and sedimentation control measures	2003	Ongoing	Work with local governments to obtain a greater enforcement of erosion and sedimentation control measures at the local level

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Comprehensive Nutrient Management Plan (CNMP)	Agriculture Extension Service, Department of Natural Resources	Leads effort in agricultural water quality by developing plans to control animal waste runoff	2001	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Animal facility runoff	Goose Creek	Effective in the initial stages of the program's beginning and if the plans are carried out properly

Measurable Milestones	Schedule		Comments
	Start	End	
Increase the number of farming establishments implementing plans/Encourage increased compliance with plan requirements	2001	Ongoing	Plans will continue to be effective at the local level if they continue to be implemented by more and more farming establishments

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Georgia Planning Act (OCGA 12-2-8)	Georgia Department of Natural Resources and Local Governments	Authorized DCA to develop minimum planning standards and procedures that local government planning and zoning jurisdictions could adopt and enforce pertaining to the protection of river corridors, mountains, water supply watersheds, groundwater recharge areas, and wetlands	1989	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Agricultural, Residential	Goose Creek	Effectiveness is minimal because of lack of land use management regulations at the local level

Measurable Milestones	Schedule		Comments
	Start	End	
Land Use Management Regulations	2003	Ongoing	Need to work with local governments to establish land use management regulations and other regulations as appropriate/ Need to work with local governments in enforcing DNR's Part 5 Environmental Planning criteria to better protect local streams

Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Local Septic Tank Permit Ordinance	Georgia Department of Human Resources and Local Governments	Authorizes the regulation of septic tanks, including placement, installation and maintenance	1969	Current	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Residential	Goose Creek	Effective at point of construction and poor at point of post-construction follow up maintenance

Measurable Milestones	Schedule		Comments
	Start	End	
Continuous updating of health inspector manual to upgrade current standards	1969	Ongoing	Better enforcement at local level needed

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Land Use Management Regulations	Heart of Georgia Altamaha Regional Development Center, Local Governments, Georgia Department of Natural Resources, Georgia Department of Human Resources, Georgia Department of Community Affairs, Georgia Forestry Commission	Utilize state-mandated environmental planning criteria, local planning and zoning ordinances, BMPs for agriculture and forestry, and septic tank permitting to manage runoff and development, RDC will provide technical assistance in developing a model "zoning-lite" ordinance to encourage local governments to implement planning and zoning measures	Adopted on a County-by-County basis	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Agricultural, Residential	Goose Creek	Not very effective due to lack of Land Use Regulations on county-wide level

Measurable Milestones	Schedule		Comments
	Start	End	
Establishment of County-wide Land Use Regulations	2008	Ongoing	There is a need to work with local governments to adopt Land Use Regulations

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Cooperative Monitoring Program	Georgia Department of Natural Resources, Georgia Environmental Protection Division, Local Governments, Heart of Georgia Altamaha Regional Development Center	Seek a scientific study of issues such as natural dissolved oxygen levels in slow-moving streams, could seek funding/cooperation for watershed assessments including possible model demonstration assessments for small watersheds, develop a program for implementation assessments for the Goose Creek Watershed		Planned	Voluntary

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Agricultural, Residential	Goose Creek	Anticipated effectiveness is significant because of more frequent monitoring which will produce better and more frequent data

Measurable Milestones	Schedule Start	Schedule End	Comments
Implementation of Adopt-A-Stream programs with various organizations for purposes of more sampling/Additional monitoring to increase the amount of data collected	2003	Ongoing	Utilize monitoring programs of Georgia Forestry Commission, NRCS, Adopt-A-Stream to gather updated sampling data on a more frequent basis

Regulation/Ordinance or Management Measure	Responsible Government, Organization or Entity	Description	Enacted/ Projected Date	Status	Regulatory /Voluntary
Environmental Code Enforcement	Local Governments, Department of Natural Resources, Environmental Protection Division	Utilize local ordinances to ensure greater compliance with state environmental codes at the local level	2008	Planned	Regulatory

Pollutant(s) Affected	Sources of Pollutant(s)	Impacted Waterbodies*	Anticipated or Past Effectiveness
Fecal Coliform	Residential	Goose Creek	Limited effectiveness due to lack of enforcement at county-wide level

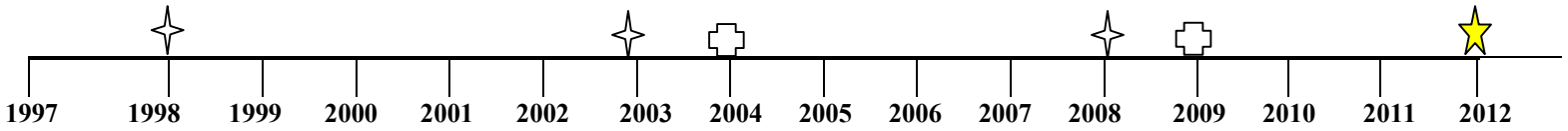
Measurable Milestones	Schedule Start	Schedule End	Comments
Establishment of code enforcement program	2008	Ongoing	Greater enforcement of state standards at the local level could help to reduce the amount of man made wastes entering into local streams

POTENTIAL FUNDING SOURCES The identification and discussion of dedicated funding is important in determining the economic feasibility of the above-mentioned management measures.

Funding Source	Responsible Authority	Status	Anticipated Funding Amount	Impacted Waterbodies*
Georgia Forestry Commission	Georgia Forestry Commission	Current	Unknown	Goose Creek
Georgia Department of Natural Resources	Environmental Protection Division	Current	$75,000.00	Goose Creek
U.S. Environmental Protection Agency	U.S. Environmental Protection Agency	Planned	Unknown	Goose Creek
U.S. Department of Agriculture	Farm Service Agency	Planned	Unknown	Goose Creek
U.S. Department of Agriculture	Natural Resource Conservation Service	Planned	Unknown	Goose Creek
U.S. Fish and Wildlife Service	Georgia Soil and Water Conservation Service ("Partners for Wildlife" Program)	Planned	Unknown	Goose Creek
University of Georgia Extension Service	Local Cooperative Extension Service (Home*A*Syst Program)	Planned	Unknown	Goose Creek
University of Georgia Extension Service	Local Cooperative Extension Service (Farm*A*Syst Program)	Planned	Unknown	Goose Creek
State Implementation Committee	Sustainable Forestry Initiative Program	Planned	Unknown	Goose Creek
Georgia Forestry Commission	Georgia Forestry Commission (Best Management Practices Assurance Examinations)	Current	Unknown	Goose Creek
The National Fish and Wildlife Foundation	The National Fish and Wildlife Foundation (General Challenge Grant Program)	Planned	Unknown	Goose Creek
Georgia Department of Natural Resources (Wildlife Resources Division)	Georgia Department of Natural Resources (Wildlife Resources Division) "Small Game Management in Georgia" & "Beaver Management and Control in Georgia" Booklets	Current	Unknown	Goose Creek

PROJECTED ATTAINMENT DATE

The projected date to attain and maintain water quality standards in this watershed is 10 years from acceptance of the TMDL Implementation Plan by EPD.



EPD Monitoring
Evaluate TMDL & Attainment Date
Project Attainment

MONITORING PLAN

The purpose of this monitoring plan is to determine the effectiveness of the target TMDL and the management measures being implemented to meet water quality standards. List of previous, current or planned/proposed sampling activities or other surveys. (Monitoring data that placed stream on 303(d) list will be provided if requested.)

Name Of Regulation / Ordinance Or Management Measure	Organization	Impacted Waterbodies*	Pollutants	Purpose/Description	Time Frame		Status (Previous, Current, Proposed)
					Start	End	
1999 Study	United States Geological Survey	Goose Creek	Fecal Coliform	To detect the levels of Fecal Coliform at the USGS Certified Station #02225980 (County Road 30 near Jesup, GA)	1/99	12/99	Previous
Best Management Practices Monitoring	Georgia Forestry Commission	Goose Creek	Fecal Coliform	Within the watershed, can conduct monthly aerial and land reconnaissance to identify recent forestry practices, conduct BMP audit, and make recommendations for remediation if problems are found		On-going	Current

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CRITERIA TO DETERMINE WHETHER SUBSTANTIAL PROGRESS IS BEING MADE

The following set of criteria will be used to determine whether any substantial progress is being made towards reducing pollutants in impaired waterbodies and attaining water quality standards. Discussion on each criteria is recorded in the space provided. Additional relevant criteria are presented in comments.

Percent of concentration or load change (monitoring program) Install BMPs and reduce the amount of fecal coliform by 20% by 2012

If monitoring results show that it is unlikely that the TMDL will be adequate to meet water quality standards, revision of the TMDL may be necessary.

- Categorical change in classification of the stream (delisting the stream is the goal) Classification is proposed to remain fishing/ Delist from 303(d) list

- Regulatory controls or activities installed (ordinances, laws) Work with local governments and individuals to install Erosion and Sedimentation Controls, Land Use Management Regulations (Development Regulations such as stream buffers, limited impervious cover, porous pavement materials, limited clearing, grading, and disturbance); BMPs, Storm Water Management, Code Enforcement, etc. to help reduce runoff and minimize land disturbance.

- Best management practices installed (agricultural, forestry, urban) Agriculture – (Waste Storage Facilities, Conservation Tillage, Waste Storage Pond, Diversion, Fencing, Field Borders, Filter Strips, Stock Trails/Walkways)

COMMENTS

Attachments

Appendix A – Goose Creek Watershed Proposed TMDL Implementation Plan Committee Meeting Invitation List (April 10, 2003)
Appendix B – Goose Creek Watershed Proposed TMDL Implementation Plan List of Major Landowners Invited to Committee Meeting (April 10, 2003) (Wayne County)
Appendix C – Goose Creek Watershed Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Sign-in Sheet (April 10, 2003)
Appendix D – Goose Creek Watershed Proposed TMDL Implementation Plan Committee and Major Landowners Meeting Handout (April 10, 2003)
Appendix E – Stakeholder Notification List for Goose Creek Watershed Proposed TMDL Implementation Plan Public Meeting (May 8, 2003) (Wayne County)
Appendix F – Press Release for Public Meeting for Goose Creek Watershed Proposed TMDL Implementation Plan in The Press-Sentinel (May 1, 2003)
Appendix G – Public Service Announcement concerning Goose Creek Watershed Proposed TMDL Implementation Plan given to WIFO-FM (105.5 in Jesup, GA) (May 5-8, 2003)
Appendix H – Goose Creek Watershed Proposed TMDL Implementation Plan Public Meeting Sign-in Sheet (May 8, 2003)
Appendix I – Goose Creek Watershed Proposed TMDL Implementation Plan Public Meeting Handout (May 8, 2003)
Appendix J – Memo to Wayne Co. Commissioners to be placed in the May 5th, 2003 Meeting Agenda Packet (April 7, 2003)
Appendix K – Memo to City of Odum City Council to be placed in the May 6th, 2003 Meeting Agenda Packet (April 7, 2003)
Appendix L – Memo to City of Screven City Council to be placed in the June 2nd, 2003 Meeting Agenda Packet (May 7, 2003)
Appendix M - Goose Creek Watershed Proposed TMDL Implementation Plan Handout for Wayne County Commissioners meeting and Cities of Odum and Screven's City Council Meetings
Appendix N – Goose Creek Watershed Proposed TMDL Implementation Plan Committee Review Memo (June 27, 2003)

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Environmental Protection Division of the Department of Natural Resources, State of Georgia.

TOGETHER WE CAN MAKE A DIFFERENCE!